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TITLE: Automated detection of
pornographic images

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INVENTOR-INFORMATION:

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ABSTRACT:

   A method of detecting pornographic images,
wherein a color reference

database is prepared in LAB color space defining a plurality of colors
representing relevant portions of a human body. A questionable image is
selected, and sampled pixels are compared with the color reference database.
Areas having a matching pixel are subjected to a texture analysis to determine
if the pixel is an isolated color or if other comparable pixels surround it; a
condition indicating possible skin. If an area of possible skin is found, the
questionable image is classified as objectionable. A further embodiment
includes preparation of a questionable image reference shape database defining
objectionable shapes. An image with a detected area of possible skin is
compared with the shape database, and depending on the results of the shape
analysis, a predefined percentage of the images are classified for manual
review.

22 Claims, 13 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 13

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Detailed Description Text - DETX (5):
   FIG. 2 of the drawing illustrates an alternate embodiment of the color
detection and shape detection steps of the present invention. A color
detection process 40 includes a series of steps, each similar to steps 10 and

12 of FIG. 1 with each detection step (44, 76 and 82) focussing on a particular
color type. A shape detection process 42 includes separate shape detection
steps 48, 56 and 64, each similar to the shape detection 14 of FIG. 1. Each
process (48, 56, 64) is for a different type of shape. Input 43 represents the
reception/selection of a questionable image that needs to be analyzed. Block
44 represents the detection of a particular color type, such as "white" and
involves the operations of blocks 10 and 12 as described in FIG. 1. If the
pixel color is determined to be **"skin"** 46, the image is sent to a first shape
detection process indicated for example as **"face** detection" of block 48 wherein
steps similar to blocks 26 and 28 of FIG. 1 are performed. If the image is
detected as a "face" 50, the image is classified as "portrait" and a manual
check/inspection is done only infrequently (block 52). If the image is not a
"face" 54, the image is analyzed to determine if it is a body part (block 56)
i.e., other than a face. If it is not a body part (58), the image is
classified as a "landscape", and this type is only inspected occasionally
(block 60) i.e. only a small percentage of these images are inspected manually.
If the image is a body part (62), a pose detection is done to determine if
there is an erotic position (block 64). If it is determined that the pose is
not erotic (66), this image is classified as a "swim suit picture" and the
result of the detection may be a "parental guidance" notice attached (block
68). If the pose detection 64 indicates that the

image is erotic 70, it is
classified as objectionable and 100% manual
inspection is required prior to
allowing access (block 72).